

INTISARI

White spot merupakan tampakan klinis awal pada gigi yang mengalami karies akibat demineralisasi. Demineralisasi merupakan proses terlarutnya hidroksiapatit gigi. Remineralisasi dapat mengembalikan mineral yang larut akibat demineralisasi. Remineralisasi terjadi ketika ion kalsium dan fosfat terdeposisi ke permukaan gigi menjadi hidroksiapatit. Tulang ikan lele memiliki kandungan hidroksiapatit yang berpotensi digunakan sebagai bahan remineralisasi. Penelitian ini bertujuan untuk mengetahui pengaruh aplikasi pasta hidroksiapatit konsentrasi 45% terhadap kadar fosfat gigi dengan lesi *white spot*.

Penelitian ini menggunakan pasta hidroksiapatit yang diekstrak dari tulang ikan lele melalui metode *heat treatment* (kalsinasi). Penelitian terdiri dari 10 gigi premolar rahang atas yang bebas karies sebagai sampel. Setiap gigi dipotong menjadi 2 bagian. Lesi *white spot* diinduksi dengan aplikasi asam fosfat 37% selama 60 detik pada sisi bagian proksimal, dibatasi area berdiameter 5 mm. Sampel dibagi menjadi 2 kelompok: kelompok perlakuan dan kelompok kontrol positif. Pada kelompok perlakuan, pasta tulang lele diaplikasikan ke *white spot*, sedangkan *Casein Phosphopeptide-Amorphous Calcium Phosphate* (CPP-ACP) diaplikasikan ke *white spot* pada kelompok kontrol positif. *White spot* tidak diberi perlakuan pada kontrol negatif di tiap kelompok. Aplikasi dilakukan setiap 12 jam sekali selama 6 hari berturut-turut. Sampel disimpan dalam saliva buatan dan diganti setiap 12 jam. Kadar fosfat diukur dengan Spektrofotometer UV-Vis. Data dianalisis dengan *paired t-test* dan *independent sample t-test* ($p < 0,05$).

Hasil *paired t-test* menunjukkan perbedaan yang signifikan antara kadar fosfat gigi pada kelompok yang dipapar pasta tulang lele maupun CPP-ACP dengan kelompok kontrol negatifnya ($p < 0,05$). Uji *independent t-test* pada kadar fosfat gigi antara kelompok pasta tulang lele dengan kelompok CPP-ACP menunjukkan perbedaan yang signifikan ($p < 0,05$). Kesimpulan penelitian ini adalah aplikasi pasta tulang ikan lele dapat meningkatkan kadar fosfat pada gigi dengan lesi *white spot*.

Kata kunci : tulang ikan lele, *white spot*, remineralisasi, fosfat gigi

ABSTRACT

White spot lesion are the initial clinical manifestation of dental caries caused by demineralization. Demineralization is the process of hydroxyapatite dissolution in teeth. Remineralization can restore dissolved minerals due to demineralization. This process occurs when calcium and phosphate ions are deposited on the tooth surface, forming hydroxyapatite. Catfish bone contain hydroxyapatite, which has the potential to be used as a remineralization agent. This study aims to determine the effect of applying 45% concentration of hydroxyapatite paste on the phosphate levels of teeth with white spot lesions.

This study utilized hydroxyapatite paste extracted from catfish bone through the treatment (calcination) method. The research sample consisted of 10 caries-free maxillary premolar teeth. Each tooth was sectioned into two parts. White spot lesion were induced by applying 37% phosphoric acid for 60 second on the proximal surface within a 5 mm diameter area. The samples were divided into two groups: the treatment group and the positive control group. In the treatment group, catfish bone paste was applied to the white spot lesion, while in the positive control group, Casein Phosphopeptide-Amorphous Calcium Phosphate (CPP-ACP) was applied. In both groups, a negative control was included, in which no treatment was applied to the white spot lesion. The application was performed every 12 hours for six cosecutive days. The sample were stored in artificial saliva, which was replaced every 12 hours. Phosphate levels were measured using a UV-Vis spectrofotometer, and data were analyzed using a paired t-test and independent sample t-test.

The results of the paired t-test showed significant difference between the level of dental phosphate in the group exposed to catfish bone paste and CPP-ACP and the negative control group ($p < 0,05$). The independent t-test on the increase in tooth phosphate level between the catfish bone paste group and the CPP-ACP group showed a significant difference ($p < 0,05$). In conclusion, the application of the catfish bone paste can enhance phosphate level in teeth with white spot lesions.

Keyword: catfish bone, white spot, remineralization, dental phosphat